VOLUME – 2

TECHNICAL SPECIFICATIONS

The details of items to be supplied / executed in this tender are as follows and technical specification of these equipments / materials / works to be executed are as stipulated in the BESCOM/KPWD/BWSSB specification and / or relevant IS / IEC standards. The contractor shall ensure compliance to these specification and Standards. All equipments /materials being supplied shall conform to type tests and shall be subject to routine tests in accordance with requirements stipulated in the BESCOM/KPWD/BWSSB specification and/or IS/IEC standards.

Sl. No.	Particular
1	Labuor charges for dismantling the Existing pumpsets, base frame and suction delivery pipeline, disconnect the power cable. The same removed / scrapped pumpsets shifted to the stores as directed by Engineer in charge
2	Demolishing cement concrete manually/ by mechanical means including disposal of material to the appropriate disposal area as per direction Engineer-in-charge. Existing foundation=0.8x2x2 x4Nos- 9.6 m3 CSR 2023-24 :Vol-2, Page.No- 187 ,I.No-19.2.1
3	Providing and laying in Position Cement Concrete for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed, laid inlayers not exceeding 150 mm thickness, well compacted using plate vibrators,including all lead & lifts, cost of all materials of quality, labour, Usage charges ofmachinery, curing, and all the other appurtenances required to complete thework as per technical specifications. Mix 1:3:6 Using 40 mm nominal size graded crushed coarse aggregates Base foundation for pumpset =0.8x2x2 x1Nos.-3.2m3 CSR 2023-24 :Vol-1, Page.No- 15 ,I.No-2.1.3
4	Supplying, fitting and placing TMT FE 550 / 550D Steel Reinforcement including cost of all materials, machinery, labour, cleaning, straightening, cutting, bending, hooking, laping/welding joints, tying with binding wire / soft annealed steel wire and other ancilary operations complete as per

Sl. No.	Particular
	drawing and technical specification.For bulding CSR 2023-24 :Vol-1, Page.No- 18 ,I.No-2.11
5	Supply brand new 40HP, 104.4CuM/Hr@60m head, 7 stage, Vertical Openwell Submersible Type, 152 Meters Shut off head, 100mm outlet size pump set. (As per Quotation received from Authorized Dealer of CRI Pumps)
6	Supply brand new 50HP, 126CuM/Hr@60m head, 3 stage, Vertical Openwell Submersible Type, 100 Meters Shut off head, 150mm outlet size pump set. (As per Quotation received from Authorized Dealer of CRI Pumps)
7	Supply brand new 30HP, 72CuM/Hr@65m head, 4 stage, Vertical Openwell Submersible Type, 100 Meters Shut off head, 150mm outlet size pump set. (As per Quotation received from Authorized Dealer of CRI Pumps)
8	Labour charges for the erection,instalaltion and commissioing of 4HSC pumpset along with base frame accessories
9	Manufacturing, providing, transporting, rolling, lowering, laying, jointing & testing and commissioning of MS specials of minimum 8mm thick such as bends, tail pieces, reduces etc. conforming to IS-7322:1985 with latest amendments and including perfect linking and welding of joints to correct position including cost and conveyance of materials with all lead and lifts, cost all labour and giving satisfactory hydraulic test as per IS:3589:2001 with latest amendments for test pressure and working pressure both at factory and site etc. complete as per detailed specifications with inside lining two coat of food grade epoxy painting of approved make with each coat of 250 micron thick (after dry) over one coat of food grade epoxy primer of approved make with minimum of 50 micron thick (after dry) and outside 25 mm thick coating in CM 1:3 by providing 50x50 mm weld mesh including loading and unloading of the pipes for the following category to suit PSC / MS / CI / AC / DI / PVC pipes. The rates are inclusive of all taxes and duties. The weight of MS shell only by considered before lining and coating for arriving at the rate. The thickness of plate will be specified by the engineer. (Contractor will make hiw own arrangements for procuring water for testing) CSR 2023-24 Vol-5,Page No- 71 ,I.No-

Sl. No.	Particular
	5.37.1
10	Providing and fixing of DI Double flanged wafer type (Concentric) /double eccentrically disc, Resilent seated Butterfly valves confoming to BS EN 593 / IS 13095 with shaft shall be of stainless steel AISI 410/431/420 and Renewable soft seal on the disc and body seat face of nickel weld overlay micro finished/Bolted External Seat of SS 304/ CF8 with Powder or liquid epoxy coating with minimum thickness of 250 microns applied on both body and disc inside and outside. Fceto face dimensions as per EN 558-1 Basic series 14 (DIN 3203 F4) or AWWA C 504 : 80 or IS 13095. The valves shall be supplied along withthe required number of standard make galvanized Bolts and nuits. The flange drilling standard is IS 1538. hence, drilling of hole in the valves shall match with the pipe flange drilling standard, the valves are to be suitabale for buried operaion with the gear box sealed and lubricated for life time opration. (All the drilled holes in the body shall be of though holes, no tapped holes will be allowed).DI Double Flanged Eccentric Butterfly Valve For PN 16.0 200mm. CSR 2023-24 Vol-5,Page No-31 ,I.No-2.42.1
11	Supplying and fixing DI Resilient seated soft sealing SLUICE VALVE of variouis dia. with body bonnet of ductile iron (DI) conforming to IS 1865 and of grade GGG 40/50, shaft of stainless steel, wedge fully rubber lined with EDPM seals of NBR and the valves should be vacum tight and 100% leak proof with face to face dimensions as per IS 14846-2000 only. The stem sealing should be with toroidal sealing rings (minimum 2 “ O “ rings). Body and bonut should be coated with Electrostatically applied Epoxy Powder Coating with minimum coating thickness of 250 micron both inside and outside. The rate is inclusive of cost of valves, T.P set, galvanized bolts & nuts and rubber insertions etc. but excluding earth work. (Note: TP set should be considered only for DI pipes estimate. For MS pipes estimates, TP sets cost of corresponding dia shall be deducted from the SR rates of valves and provision for corresponding dia MS flanges should be made in the estimate.) For PN-16: For Suilce Valve of PN 16.0 and 200mm CSR 2023-24 Vol-5,Page No-23 ,I.No-2.24.5
12	Supply and fixing of ductile iron double flanged swing check vavles with slanted seat or with lever weight with straight

Sl. No.	Particular
	disc, with metallic corrosion proof and wear resistant seat faces with nickel overlay micro - finished/ Integral seat with body and disc in Ductile Iron in GGG 40/50 shaft of stainless steel and bearings of zinc free bronze and surface protection with epoxy liquid of GSK quality. For PN 16.0 - 200mm dia CSR 2023-24 Vol-5,Page No-32 ,I.No-2.48.5
13	Providing Ductile Iron Push on special confirming to IS 9523:2000 - All DI PN :16.0 Dismanting Joints. 200mm CSR 2023-24 Vol-5,Page No-12 ,I.No-1.12.3
14	Providing, fabricaing, supplying and fixing at site various diameters of MS Flanges as per IS standards to fix sluice valves as per sketch. The rate to include cost of all materials, labour, consumables, hire charges for tools and tackles, weldiing equipments etc. complete as per instructions of the Engineer in charge for: Flanges of 250mm dia and 16mm thick. CSR 2023-24 Vol-5,Page No- 66 ,I.No-5.30.8
15	Hydraulic Excavator of 1.1 m3 bucket .CSR 2023-24 Vol-1,Page No-A-44 ,I.No-50.
16	Earth work excavation for pipelines/cables by Manual means upto 600 mm trench width, as per drawing and technical specifications, including settingout, shoring, strutting, barricading, caution lights, removal of stumps andother deleterious matter, including dressing of excavated surfaces, disposing off or leveling the excavated earth or sorting & stacking the selected earth for reuse in a radius of 50 m. Filling available excavated earth (excluding rock)in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering and lift upto 1.5 m including cost of labour, tools, usage& other appurtenances requiredto complete the work. In all kinds of soils. Depth upto 1.50m For cable trench= 70*x0.6*1=42m3. CSR 2023-24, VOL-1, P.No:6, i.nO-1.6
17	Digging of Pit for providing GI Pipe type Earthing.Ordinary soil. CSR 2023-24, VOL-6, S.No.No:21, i.nO-1.6.1
18	GI Grounding pipe, B - Class, 42 mm dia, 2.5 Mtr long, 3.2 mm thick with bolt, nut, GI Strips and washer complete Minimum Weight of GI Pipe: 7.3 Kg. CSR 2023-24, VOL-6, S.No.No:389, i.nO-51.0
19	Good Quality well burnt Charcoal for grounding purposes packed in non returnable gunny bag of 30kg each CSR 2023-24, VOL-6, S.No.No:390, i.nO-51.02

Sl. No.	Particular
20	Good Quality Salt for grounding purposes packed in 50 Kg gunny bag CSR 2023-24, VOL-6, S.No.No:391, i.nO-51.03
21	Fabricating supplying and mounting MS box made out ... SWG suitable for floor / wall mounting, fully weather proof with provision for better heat dissipation, provided with hinged front cover, equipped with tamper proof locking arrangements, with suitable size clamps with necessary cable entry pipe with gland and box should be finished with 7tanks treatment with powder coated paint and finally finished with approved colour etc., complete. (CSR 2023-24 , Part-IIIVol- 6 P.No20, Sl.No:5.41.2)
22	Supplying and fixing angle iron frame work fabricated out of MS angle iron and MS flat with bolts, washers etc,. And painted with 2 coats of red oxide and then two coats of approved paint. 50 x 50 x 6mm - CSR 2023-24, Vol-6,Part-III,Page No-20 ,I.No-5.41.2
23	Supplying and fixing angle iron frame work fabricated out of MS angle iron and MS flat with bolts, washers etc,. And painted with 2 coats of red oxide and then two coats of approved paint.75 x 75 x 6 mm CSR 2023-24, Vol-6,Part-III,Page No-20 ,I.No-5.41.3
24	Supplying rated 3 phase with neutral bus bar using required capacity electrolytic aluminum strips covered with heat sinkable coloured PVC sleeve, mounted on phenolic/FRP/DMC insulated which are mounted on powder coated 40X6mm MS flat frame work in existing panel board. the bus bar shall have suitable holes for termination on incoming and outgoing cables as per IS specification with necessary bolts,. nuts and washers etc,. complete. For LT panel: 250 A 4 x 30 x 10 mm Aluminium Strips CSR 2023-24, Vol-6,Part-III,Page No-20 ,I.No-5.40.2
25	Supplying rated 3 phase with neutral bus bar using required capacity electrolytic aluminum strips covered with heat sinkable coloured PVC sleeve, mounted on phenolic/FRP/DMC insulated which are mounted on powder coated 40X6mm MS flat frame work in existing panel board. the bus bar shall have suitable holes for termination on incoming and outgoing cables as per IS specification with necessary bolts,. nuts and washers etc,. complete. For 1 Nos APFC panel: 100A 4 x 50 x 10 mm Aluminium Strips CSR 2023-24, Vol-6,Part-III,Page No-20 ,I.No-5.40.3
26	Supplying and fixing miniature circuit breakers on existing

Sl. No.	Particular
	MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898 For LT panel: 6-32 A SP CSR 2023-24 , Part-IIIVol- 6 P.No20, Sl.No5.18.1
26	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and 'C' Type curve, indicator ON/OFF, energy cross-3 with Short circuit breaking capacity of 10K and complete wiring as required confirming to IEC 60898 For LT panel: 6-32 A DP CSR 2023-24 , Part-IIIVol- 6 P.No20, Sl.No5.18.4
27	Supply and fixing miniature circuit breakers on existing MCB distribution board using necessary fixing materials and 'C' type curve, indicator ON/OFF energy cross-3 with short circuit breaking capacity of 10K and complete wiring complete as required confirming to IEC-60898 - 50-63 A TPN - For 2Nos APFC panel CSR 2023-24, Vol-6,Part-III,Page No-17 ,I.No-5.18.9
28	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuitwith adjustable thermal magnetic release, Micro processor release shall have Earth Fault as per IS/IEC60947-2 . (Icu=100% lcs). In 4P MCCB, all Poles should haveprotection for Short-Cicrcuit/Over Load. For MicroprocessorMCCBS Facility for segregating Priority and Non-Priority loads must be available in the MCCB. MCCB shall be provided with double insulation (insulation between front cover and internal power circuits to avoid any accidental contact with live current carryingpath with the front cover open). Multi-pole breakers shall bedesigned to break all the poles simultaneously and they shall have asingle mechanism.100 A 25 kA For LTpanel. CSR 2023-24, Vol-6,Part-III,Page No- 15 ,I.No-5.15.1
29	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuitwith adjustable thermal magnetic release, Micro processor release shall have Earth Fault as per IS/IEC60947-2 . (Icu=100% lcs). In 4P MCCB, all Poles should haveprotection for Short-Cicrcuit/Over Load. For Microprocessor MCCBS Facility for

Sl. No.	Particular
	segregating Priority and Non-Priority loads must be available in the MCCB. MCCB shall be provided with double insulation (insulation between front cover and internal power circuits to avoid any accidental contact with live current carryingpath with the front cover open). Multi-pole breakers shall bedesigned to break all the poles simultaneously and they shall have asingle mechanism.250 A 25 Ka For LT panel. CSR 2023-24, Vol-6,Part-III,Page No- 16 ,I.No-5.15.5
30	Supplying and fixing Moulded Case Circuit Breaker (MCCB) over the existing wood/panel board using necessary screws, bolts, nuts, necessary phase separators, handle and wiring complete. Protection of Overload and Short circuitwith adjustable thermal magnetic release, Micro processor release shall have Earth Fault as per IS/IEC60947-2 . (Icu=100% lcs). In 4P MCCB, all Poles should haveprotection for Short-Cicrcuit/Over Load. For MicroprocessorMCCBS Facility for segregating Priority and Non-Priority loads must be available in the MCCB. MCCB shall be provided with double insulation (insulation between front cover and internal power circuits to avoid any accidental contact with live current carrying path with the front cover open). Multi-pole breakers shall be designed to break all the poles simultaneously and they shall have asingle mechanism.400 A 50 kA For LT panel- 4 Nos For 2nos APFC panel- 2nos CSR 2023-24, Vol-6,Part-III,Page No-16 ,I.No-5.15.8
31	Supplying and fixing of Shunt trip suitable for MCCB.CBCT CSR 2023-24, Vol-6,Part-III,Page No-17 ,I.No-5.16
	Supplying, fixing and wiring earth leakage relay with core balanced current transformer suitable for single phase 50 Hz AC with latest microcontroller based, digital readout of percentage leakage current, programmable delay/auto/manual reset facility suitable to mount on DIN rail/ flush mounting on panel board. For LT panel- 1Nos For APFC panel- 1nos CSR 2023-24, Vol-6,Part-III,Page No-17,I.No-5.2139 (CSR 2023-24 , Part-IIIVol- 6 P.No20, Sl.No5.21)
32	Supplying and fixing one of 230 volts bell or buzzer and a flush type bell push with gang box fixed on necessary wooden or rawl plugs using NF screws. -For LT panel- 1 Nos (CSR 2023-24 , Part-IIIVol- 6 P.No-15, Sl.No:12.1)
33	Supplying and fixing of LED type panel board indicating lamp

Sl. No.	Particular
	with required colour suitable for 220v A.C. 50 Hz 12/24v D.C. For LT panel- 3 Nos For 1 nos of APFC- 13 nos (CSR 2023-24 , Part-III Vol- 6 P.No20, Sl.No:5.38)
34	Supplying, fixing and wiring 3 Digit Digital Ammeter/ Voltmeter For LT panel- 1 Nos For 1 nos of APFC- 1 nos (CSR 2023-24 , Part-IIIVol- 6 P.No20, Sl.No5.29)
35	Supplying and fixing wiring 50/5 to 400/5 amps 5VA Burden current transformer class 0.5 accuracy for LT panel- 3 Nos For 1 nos of APFC- 3 nosCSR 2023-24, Vol-6,Part-III,Page No-19 ,I.No-5.34
36	Supplying, fixing and wiring rotary selector switch suitable for Ammeter. - (CSR 2023-24 , Part-IIIVol- 6 P.No20, Sl.No:5.27)
37	Supplying of multifunction digitalmeter with threeline backlight LCD type display for voltage ,Current, frequency, Power, power factor, kVA, kWH, kVAR suitable for 3phase, 4wire LT network with IP54 degree of protection and completely wiredas required with communication Port and Class 0.5s accuracy For 1 nos of APFC-1 For LT panel-3 CSR 2023-24, Vol-6,Part-III,Page No-19 ,I.No-5.33
38	Supplying and fixing Microprocessor based Electronic timer (without contactor, Din Mounting using necessary bolts, nuts and washers etc.,.) 3-120sec setting For 2 nos of APFC- 4 nos CSR 2023-24, Vol-6,Part-III,Page No- 21 ,I.No-5.47
39	Supply and fixing of 4 pole power contactor with NO/NC contacts on existing woor/panel board using necessary bolts, nuts, washers and wiring etc, complete with AC-3 rating and as per IS-13947.40A CSR 2023-24, Vol-6,Part-III,Page No- 16 ,I.No-5.14.8
40	Supply and fixing of 4 pole power contactor with NO/NC contacts on existing woor/panel board using necessary bolts, nuts, washers and wiring etc, complete with AC-3 rating and as per IS-13947. 65 Amps-CSR 2023-24, Vol-6,Part-III,Page No- 16 ,I.No-5.14.5
41	Supplying, fixingand wiring Automatic Power Factor controller circuit unitfully, static units controlled by 14stage

Sl. No.	Particular
	microprocessor operation ,relays LED display, self programming function for power stages and operating logic checking facility for healthy and efficient of each individual capacitor bank, measurement of network harmonics with indication when limit values are exceeded, Comprehensive displays withlarge, three phase LED display, Long term memory forsettings, protection forover voltage, powerfactor correction faultandno voltage ,toconnect/disconnectbanks, with automatic recognitionor with standard programs. CSR 2023-24, Vol-6,Part-III,Page No- 19 ,I.No-5.39
42	Supplying ,fixing and wiring heavy duty low voltage capacitors conforming to IS2834.3phase,400/440Vgrade,for powerfactor improvement of rotating machineries like induction motor. For 2 Nos of 75KVAR each APFC- 140KVAR CSR 2023-24, Vol-6,Part-III,Page No-19 ,I.No-5.37
43	Supply and fixing of Auxiliary contactor relay with 2 NO and 2 NC contact and operating coil voltage of 220V to 260V. fixed on existing wood/panel board using necessary bolts, nuts, washers and wiring etc., CSR 2023-24, Vol-6,Part-III,Page No-21 ,I.No-5.53
44	Wiring for lighting/power circuit using one of FRLS PVC insulated 1100V grade, multistrand copper wire with low conductor resistance single core in open or concealed system of wiring. I Group A materials 6Sq.mm CSR 2023-24, Vol-6,Part-III,Page No- 5 ,I.No-2.3.5
45	Wiring for lighting/power circuit using one of FRLS PVC insulated 1100V grade, multistrand copper wire with low conductor resistance single core in open or concealed system of wiring. I Group A materials 16Sq.mm CSR 2023-24, Vol-6,Part-III,Page No- 6 ,I.No-2.3.7
46	Supplying and fixing angle iron frame work fabricated out of MS angle iron & MS flat with bolts, washers etc., and painted with 2 coats of red oxide and then two coats of approved paint 50x50x6mm P-15, I-5.41.2 of SR PWD 2023-24
47	Supply and fixing of 4 pole power contactors with NO/NC contacts on existing wood/panel board using necessary bolts, nuts, washers and wiring etc., complete with AC-3 rating and as per IS-13947 P-11, I-5.13.1,3,4 of SR PWD 2023-24
	100-125 Amps
	60-70Amps
	25Amps

Sl. No.	Particular
48	Supplying and fixing Microprocessor based Astronomical timer switch with using necessary bolts, nuts and washers P-16, I-5.48 of SR PWD 2023-24
49	Supplying and fixing miniature circuit breakers on existing MCB distribution boards using necessary fixing materials and C type curve, indicator ON/OFF, energy cross-3 with short circuit breaking capacity of 10K and complete wiring as required confirming to EIC 60898, 6-32Amps SP P-13, I-5.17.1 of SR PWD 2023-24
50	Supplying, fixing and wiring 50/5 to 400/5A 5VA burden Current Transformer Class 0.5 accuracy with Tape Wound P-14, I-5.34 of SR PWD 2023-24
51	Supplying and fixing of LED type panel board indicating lamp with required colour suitable for 230/440VAC. 50 Hz 12/24V D.C. P-14, I-5.38 of SR PWD 2023-24
52	Supplying, fixing and wiring earth leakage relay with core balanced current transformer suitable for single phase 50 Hz AC with latest microcontroller based, digital readout of percentage leakage current, programmable delay/auto/ manual reset facility suitable to mount on DIN rail/ flush mounting on panel board P-14, I-5.21 of SR PWD 2023-24
53	Supplying, fixing and wiring 3 Phase Digital Ammeter / Voltmeter P-14, I-5.29 of SR PWD 2023-24
54	Supplying, fixing and wiring rotary selector switch suitable for Ammeter P-14, I-5.27 of SR PWD 2023-24
55	Supplying, fixing and wiring rotary selector switch suitable for Voltmeter P-14, I-5.28 of SR PWD 2023-24
56	Fabricating supplying and mounting MS box made out ...14.SWG suitable for floor /wall mounting, fully weather proof with provision for better heat dissipation, provided with hinged front cover, equipped with tamper proof locking arrangements, with suitable size clA with necessary cable entry pipe with gland and box should be finished with 7tanks treatment with powder coated paint and finally finished with approved colour etc., complete. P-15, I-5.42.1 of SR PWD 2023-24
57	Supplying 250 A rated 3phase with neutral bus bar using required capacity electrolytic aluminium strips covered with heat shrinkable coloured PVC sleeve, mounted on phenolic/FRP/DMC insulator which are mounted on powder coated 40x6mm M.S.flat frame work in existing panel board. The bus bar shall have suitable holes for termination of

Sl. No.	Particular
	incoming and outgoing cables as per IS specification with necessary bolts, nuts and washers etc., complete 100A4x30x10mm Aluminium strips P-15, I-5.40.1 of SR PWD 2023-24
58	Wiring for lighting/power circuit using one of FRLS PVC insulated 1100V grade, multistrand copper wire with low conductor resistance single core in open or concealed system of wiring with specified IS-694:confirming to latest amendments. P-3, I-2.3.5,7 of SR PWD 2023-24
	6Sqmm
	16Sqmm
59	Electrician P-A 49, I-II of CSR V-1 PWD 2023-24
60	Helper P-A49, I-III of CSR PWD V-1 2023-24
61	Mobile Hydraulic crane 15T capacity P-A45, I-75 of CSR PWD V-1 2023-24
62	1.1kV, XLPE or Heat resistant PVC insulated, PVC extruded Inner Sheath Armoured LTUG Cable as per IS-1554 (Part1) or IS-7098 Part-1, Armouring strip thickness and resistivity as per IS-397 P-13, I-32.14,18 of CSR BESCOM 2023-24
	240sqmmx3.5 core
	95Sqmmx3.5 core
63	Laying of cable in Existing Trench/GI pipe/Stone Ware/RCC Hume pipe using Wooden/Aluminium Rollers as directed by the departmental staff P-52, I-21.06,7 of CSR BESCOM 2023-24
	3x95 to 150sqmm
	120 to 240sqmm
64	Heavy Duty Copper Terminal Long Barrel 95sqmm copper terminal P-20,I-63.05 of SR PWD 2023-24
65	Supply of 45KW/60HP copper reactor coil for the above said starter panel
66	Supply of On/OFF/RESET push buttons for Panel
67	Supply of CT-4 relay 45-125 Amps
68	Supply of under, over voltage & single phase fail protection relay